

IMPROVEMENT IN THE MANUFACTURE OF GAS.—A workman engaged at Eak Mill, Edinburgh, named J. Luthien, is said to have perfected an important improvement, whereby a saving of one-half of metal, fuel, &c. is effected by a new construction of the flues, and siting of the st. His principle of building flues is also said to be well worthy notice of those having small establishments, where gas is required. A days since, he made in four-and-a-half hours, by one small retort, cubic feet of gas, the same being prepared from various substances.—We should be glad of some further particulars respecting these improvements, and should any correspondents on the spot forward a communication, shall have ready insertion.

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ON LOCOMOTIVES ON THE EXPANSIVE PRINCIPLE.

(FROM A CORRESPONDENT.)

An interesting report has been made by the director of the Belgian Railway to the Minister of Public Works, on the subject of the comparative advantage of locomotives on the expansive and on the common principle. It concludes with stating the result of numerous and long-continued experiments, as follows:—On the line from Brussels to Malines, the experiments were continued, without interruption, from the 7th to the 15th of September; a machine on the expansive principle, and one on the common principle of the same force, were put on each alternate day. The total number of carriages drawn this distance of twenty kilometres was 260 by the machine on the expansive principle, and 261 by the machine on the common principle. The first consumed 137 hectolitres of coke, and the second 190, giving an economy of nearly 30 per cent. On the line from Malines to Ghent, the experiments were continued from the 17th to the 26th September. The total number of carriages drawn on this line, which has fifty-eight kilometres of length, was, for the expansive engine 125, and the ordinary engine 141. The consumption of the former was 125 hectolitres, and that of the latter 220—that is, in estimating, in both cases, the total weight transported, including the engines, the economy obtained in a league travelled was 43 per cent. On the line between Brussels and Antwerp, on a length of forty-four kilometres, the experiments took place from the 12th September to the 1st October. In these experiments, although the coke consumed during the attendance at the stations was comprised in the total consumption, the economy yet amounted to about 25 per cent., after abstraction of the consumption for lighting up the fire (pour l'allumage), which is the same in both systems. Finally, on the line from Ghent to Courtrai, on a length of forty-five kilometres, the experiments made from the 5th to the 13th October showed an economy of 37 per cent. I must remark, that, on all the sets of experiments, the trains were large, and the line level—two circumstances which are not favourable to the expansion, since they do not afford an opportunity for the apparatus being employed as it could on inclinations, or with trains smaller than the average. After the detailed report which I have had the honour to submit to you, you may convince yourself that it is only after a year of trials, of doubts, I may say, even of mistrust—that I have taken on myself to form a definitive opinion on the system of expansion. I do not hesitate to give it my full approbation, and to hope the best results from its application.

SMOKE PREVENTION.

At a meeting of the Liverpool Polytechnic Society, held at the Royal Institution, on Tuesday week, Mr. J. C. SMITH read a paper on "Smoke-Burning," in which he gave a general review of patented and other inventions for attaining this desirable object. He classified them under three heads:—1. Those requiring water or steam, as introduced in the patents of Chappe and of Ivison. 2. Those requiring a red-hot surface of fuel over which to pass the smoke, as in the plans patented by Thomas Hall, Chester, Drew, and others, which he considered most unscientific arrangements of the furnace. 3. The employing hot or cold air, as in the furnaces of Samuel Hall, C. W. Williams, and Joseph Williams. Mr. S. Hall's plan he considered complicated and liable to affect the draught. He entered at considerable length into a critical review of the treatise *On the Combustion of Coal*, by Mr. C. W. Williams, and the merits of his patent *Arrangé de fourneau*, endeavouring to show, from the chemical testimonials of Dr. Brande, Ure, and Berret, that they favoured the opinion of the possibility of economising smoke contrary to Mr. Williams's assertions. Dr. Ure having used the term, "getting rid of the smoke," which, in Mr. Smith's opinion, meant that the smoke must have been burnt. Mr. Smith concluded, by noticing the plan of Mr. Joseph Williams, commonly called Kurtz's patent, in which the air passed through a pipe near the fire-bars, and by which it became heated on its way to a box, where it was enclosed, and allowed to escape through long narrow apertures, regulated by a valve. Mr. Smith stated that his plan had been successfully used in the steam-jacket *Urgent*, and in other steamers on the river.

The president having invited observations on this interesting subject, an animated discussion followed, in which Mr. C. W. WILLIAMS explained the source of error into which Mr. Smith had fallen, as regards the observations of Mr. Brande and Dr. Ure; and observed that the latter had been good enough to correct the proofs of Mr. Williams's treatise, and was not, therefore, to be understood as concurring in Mr. Smith's remarks. Mr. Williams said, he did not object to the mere term, "smoke-burning," as used in conversation, but that he made a decided objection, and on the authority of Mr. Brande, when used in a scientific consideration of the subject. Mr. Williams observed, that, if Mr. Smith had used the term gas, when he had spoken of smoke, his observations would have been correct. He then commented on the alleged patent of Mr. Joseph Williams, and, referring to the diagram as exhibited, pointed out its direct reference to his own, the air being admitted to the gases through this longitudinal aperture, the effect of which was the same as if it passed through a series of smaller ones, as shown in some of the gas-burners in ordinary use. Mr. Williams observed, as to any effect being produced from the air being heated, that was an error, for if the pipe through which it passed was placed in any other direction the effect would be the same. As to this plan of Mr. Joseph Williams being, as Mr. Smith observed, commonly called Kurtz's patent, he had the authority of the latter gentleman for saying it; and that, in fact, he had indignantly stated that such plan was not conformable to his patent, and, further, that Mr. Joseph Williams had no patent. Mr. Williams concluded, by stating that the plan adopted by Mr. Joseph Williams was, in fact, the same as that introduced by him in several steam-vessels and land-engines, and was a direct infringement of his patent. Mr. DICKES made a few remarks on the necessary distinction between smoke and gas, in a popular point of view, and as exhibited in the flame of a common candle, where the gas is observed in the interior of the flame, and the smoke arising from the summit.—Mr. WADDELL promised hereafter to communicate his views in a paper on combustion; Mr. WILLIAMS also undertaking, on a future occasion, to go more in detail on the subject of smoke, which was so intimately connected with that of smoke-burning.—A GENTLEMAN asked if Mr. Williams meant to say that, by placing the pipe which conveyed the air to the bridge, in Mr. Joseph Williams's plan, in a vertical or other direction, the effect would be the same?—To this Mr. WILLIAMS assented, adding, that it was a matter of indifference, where or how the air was introduced, provided it was admitted by this or small apertures, so as to produce immediate diffusion with the gases; and, in fact, corresponding with the well-known principle of allowing the gas, in the Argand or other burners, to pass through small or narrow apertures to the atmosphere.

DIRECT COMMUNICATION BETWEEN LONDON AND PARIS BY RAILWAY.—When the South-Eastern Railway is completed, with its branch from Maidstone to Rye and Hastings, not only will the transit for passengers and goods through Dover, by way of Calais and Boulogne, be greatly facilitated, but a new point of communication will be opened up through the hitherto comparatively small town of Rye, which is now likely to become of great importance as a shipping port, in connection with the steam-packet traffic with France. On looking at a map with which we have been favoured, it appears the centre, from which diverge lines of passage across the Channel, to Boulogne, 40 miles; to Calais, 53; to Dieppe, 58; to St. Valéry, 70; to Havre, 67; and to Dunkirk, 70. The four first of these places are close on the line of railway from Paris to Calais (now proposed by the French Government), which, when completed, will be of the greatest convenience to the inhabitants of, and travellers through, this part of France; but on the extension of the Paris and Rouen line to Dieppe, and the establishment of regular packets between that place and Rye, or Hastings, the distances of the various lines of communication, from London to Paris, will stand thus:—By Dover, through Calais and Boulogne, 269 miles, of which the distance across the Channel is 29 miles; through Rye by Boulogne, 232—Channel, 40; Rye by Dieppe, 234—Channel, 70; Shoreham by Dieppe, 245—Channel, 85; Shoreham by Havre, 277—Channel, 90; and Southampton by Havre, 314, with a channel passage of 122 miles.

RAILWAY COMMUNICATION THROUGH NORTH WALES BETWEEN LONDON AND DUBLIN.—On Saturday a deputation, consisting of the Right Hon. the Lord Mayor, Sir E. Brough, Bart. (High Sheriff), Sir John Burke, Bart., Sir J. K. James, Bart., and Messrs. F. Parnaby, R. Gage, M.P., P. M. Pury, Halsey, McMillan, &c., waited upon his Excellency the Lord Lieutenant, for the purpose of conveying to him the resolutions adopted at a public meeting of the citizens of Dublin, which was held a short time since, and of calling his Excellency's attention to the vast importance, in all points of view, of this great national object; and upon the considerations of which a select committee of the House of Commons had been for some months engaged during the course of the session. His Excellency received the deputation in the most affable and gracious manner, entered into the merits of the proposed communication with great and lively interest, and expressed his readiness at all times, and by all the means in his power, to forward so important and truly national an object. **HARBINGER BARK.**—The following gentlemen have been elected directors for the ensuing year:—J. Callaghan, T. O'Brien, J. Douce, T. Kier, M. Walsh, D. Neeson, and P. Waldron, Esqs.

ON THE ADVANTAGES OF WIRE-ROPE.

At the Society of Arts, on Wednesday, the 14th inst., a paper by Mr. A. Smith was read, "On the Properties of Wire, as applied in the Manufacture of Rope for Mining and Railway Purposes, Standing Rigging, Lightning Conductors, Cables, &c." After some preliminary remarks on the increment of strength, as compared with the diminution of bulk, resulting from the processes of drawing and annealing the wire, Mr. Smith gave a table of the strength of single wires of various gauges, the breaking weights having been obtained by experiment with the testing machine. This was followed by a table of tests of the comparative strengths of the Government hempen-rope, and Mr. Smith's wire-rope, from experiments ordered by the Admiralty in March, 1837. Another table gave the comparative size, with the weight and cost per fathom, of iron-wire rope, hempen-rope, and chain of equal strength. The general results are, that standing rigging of wire-rope, of equal strength with the hempen-rope one-third of the size and half the weight, may be fitted at about two-thirds of the cost. In the nautical statistics of Mr. Smith's paper, it is stated, in reference to the advantages of a reduced surface of rigging, that "the standing rigging now fitted in her Majesty's navy, presents a surface of upwards of 800,000 square feet, which is about equal to the surface of the sails of twenty-four first-class frigates;" and, in reference to the disadvantages of the absorption of moisture by the hempen-rope, that "one fathom of hempen-rope, about three inches in circumference, will absorb half a pound weight of water, and will contract one inch in length. The standing and running rigging of a first-rate measures about 30,000 fathoms, and will, consequently, when wet, contract in length, on an average, about 880 yards, or nearly half a mile, and will absorb about seven tons of water, which, being principally carried aloft, will materially affect her sailing." &c. Mr. Smith explained the construction of an apparatus termed a "screw lanyard," which he substitutes for the ordinary lanyards and dead-eyes of the shrouds, for the purpose of tightening the wire-rope rigging. It consists of a piece of Russell's wrought-iron tubing, with a screw at each end, working in right and left screw sockets. The ship's lightning conductor is described as a copper wire-rope, securely fitted to the trucks and mast-head caps, and descending from the top-gallant and top-masts down the rigging and over the ship's side, where it is inserted in a copper-plate, in contact with the sheathing below the water-line. &c.—On Wednesday, the 21st, Mr. Smith continued his communication. He commenced by explaining the tenacity and elasticity of various metals, and experimented by a powerful testing machine on wires of platinum, gold, silver, copper, and iron. He first tried a piece of platinum wire, twelve inches in length, one-sixteenth of an inch in diameter, and weighing 5 dwts. 5 grs.; this experiment, however, failed from an accident. The gold wire, of the same length and size (weight, 5 dwts. 10 grs.), broke at 384 lbs.; silver, same size and length (weight, 4 dwts. 14 grs.), broke at 260 lbs.; copper, 3 dwts. 12 grs., broke at 180 lbs.; and iron, 3 dwts., at 310 lbs. A copper rod, one-fourth of an inch in diameter, was then tested, which withstood a tension of 2000 lbs.; and an iron one, of the same diameter, did not break until a power was applied equal to upwards of 3000 lbs. A wire bridge, of thirty-three feet span, was erected in the room, the construction of which Mr. Smith explained. The wire rope, forming its principal support, weighed 56 lbs.; the angle irons, 112 lbs.; and the other parts, including the braces, 56 lbs.; and 112 lbs. for the platform or footpath, composed of boards—thus making the whole weight only three cwt., and which might be completed by four men, in about three days, at a cost not exceeding 15*l.*, and could, at any time, be taken down or put up in half an hour. These descriptions of bridges were described as very useful for military purposes, and for throwing over deep cuttings in railways, &c.; and Mr. Smith stated, that for general practical purposes the cost might be taken at 1*l.* per foot, run with a breadth of three feet. Two smaller models of bridges, on different principles of construction, were also shown.—The CHAIRMAN here said, as he observed they were favoured with the presence of Colonel Pasley, perhaps that gentleman would oblige the company with his opinion on wire bridges of this kind.—Colonel PASLEY said, he was sorry he was not prepared to give an opinion. It had been his intention, some time since, to have visited Mr. Smith's works, and inspect his wire bridges, but his pursuits were then so entirely different to what he was at present engaged in, that he had not carried out the intention. His former view was as to military purposes; but having that evening only seen a bridge of this sort for the first time, he could not give an opinion from so slight a view.—Various other articles of Mr. Smith's invention were exhibited, amongst which was a new sheave and block for rigging, the case being of gun metal, the sheave cast-iron, and the pendant wrought-iron, which is equal to double the power of the old wooden blocks, though only half the size and weight—and which blocks, we understand, have been ordered for her Majesty's new steam yacht. Wire links for chains, which, instead of being forged in the usual way, are composed of a coil of wire to form the link, and then "knitted" together, and are of enormous strength in proportion to their size, whereby a whole cable can be manufactured in a few hours without welding. The lecture, upon the whole, was most interesting, and appeared to give the greatest satisfaction to the audience, which was numerous on both occasions.—We hope, on an early occasion, to give a more detailed account from the notes of Mr. Smith, to which we hope to be able to direct our attention, and compare them with our own, so as to place before our readers a succinct account of the merits of the wire-rope, and its comparative advantages with reference to that of hemp, as also the difference in the several descriptions of rope manufactured.

ON LIGHTNING CONDUCTORS.

A memoir on this subject was read before the members of the Electrical Society, on Tuesday, the 20th inst., by the secretary, Charles V. Walker, Esq.—The practical object was to remove all doubt about the propriety of connecting metallic bodies with the lightning-rod, and to demonstrate the necessity of so doing. The much-talked-of lateral spark is shown to be due to the diffusion of free electricity, and to the division of the portion of a flash required to compensate the outer coating of a jar, the lower of two discs, or the earth. The free electricity is due to, or indicative action of, the portion of the charge which does not pass. It is well known, that the inner coating of a jar contains more of the one electricity than does the outer of the other; if, therefore, a flash leaves the lower, equivalent to that required by the outer, it is evident that the portion remaining will have such an inductive action on the outer coating as to expel part of the passed flash from it, and so convert it into free electricity. Mr. Walker terms this the "induced residual," and shows that it is dependent on the original extent, and on the flash itself, as to be equal to $(1 - \frac{1}{n})p$, where n represents the ratio of excess, and p the flash.

From the fact that the greater the distance between the coating the greater the ratio of excess, Mr. Walker alludes to the distance of the clouds, and proves it in the above formula to be very great. The value of p is known by the magnitude of a lightning flash, and hence he deduces the great amount of that portion of a lightning flash converted into free electricity, or "induced residual." But experiment has demonstrated that a lateral spark is attended on the discharge even of a Leyden battery; much more, therefore, is such an effort to be expected from the discharge of a cloud. We cannot pretend to give an abstract of the whole memoir. The author proceeded to trace the diffusion of the compensating portion of the spark, or flash; he introduced many illustrative experiments with the double electrification, and a modification of the discs. He supported his position by cases of lateral accident from lightning-rods, and by the testimony of the best electricians. He concludes by explaining the construction of Mr. Harris's lightning-rods for ships, and showed how the application of his several positions proves them to be, by nearly equaling, the best protection that can be applied to our navy, providing always that the vessels are copper bottomed.

AN ANTIQUARIAN WALK IN THE FLEA.—(From a Correspondent.)—An attempt is now being made at Brighton, to drain water from beneath the chalk under the sea. The operations for this purpose are being carried on at the head of the chain pier, and it is confidently expected that the streets of chalk at this spot done not exceed seventy feet in thickness, through which, on arriving at the green sand, a constant unobstructed supply of pure water is anticipated. Should the plan succeed, the fact of a spring of pure fresh water, rising out of the sea, will be a reality equalling some of the fabulous tales of ancient times.

HYDRA'S CAVE ON DORSETSHIRE COAST.—There has lately been discovered in a quarry on Dorsetshire coast, worked by Mr. Hill, a cave, or rather a fissure in the rock (consisting of carboniferous limestone of greenish hue), containing a large assemblage of animal bones, which, upon examination, prove to be of the same character as those found in the celebrated bone caves of Swaffield, Hottum, and Uphill, on the Mendips Hills.—*Kent's South Journal.*

PARING MACHINES.—A man in New Orleans is constructing an extraordinary machine by which he intends to pare the nails. He is represented as a skilful and intelligent mechanic, and is a native of France.

REMARKS ON THE NEW WATER-MILL.

AND STATEMENT SHOWING THE POWER WHICH MAY BE OBTAINED FROM THE ORDINARY BARKER'S MILL.

Mr. James Whitbread, of Paisley, in a communication to the Glasgow Practical Mechanic, states that he has obtained a result of about three-fourths of the power of the water from one of the new water-mills with two rectangular shaped arms, and of the following dimensions:—diameter of machine fifteen inches; width of each jet, 3 inch; depth of the arms and jet-pieces, 1-8 inch; central opening six inches diameter. Any of your readers may see this machine in operation. Had the form of each cross section of the arms and jet-pieces of the machine above noticed been an oval or other suitable curve line, or had the curves of these parts been properly rounded off, the result would have exceeded three-fourths of the power of the water, for the reason that arms, &c., of either of these forms would offer a less degree of resistance to the passage of the water, than arms, &c., having rectangular shaped cross sections. I may here mention that a machine with wide jets, adapted to be of a larger diameter than one in which the jets are narrow. When the water, after it escapes, passes so far outward as just to clear the jet-pieces—the spread of the centre of the jet-pieces in relation to that of the water being the same in each, and as great as possible—and the water, when the machines are kept from revolving, leaves each at the same angle to the radius drawn through the centre of the machine and the outer end of each jet-piece. The next paragraph contains an answer to a query respecting the power which may be obtained from the ordinary Barker's mill. The answer is the same as that given by Mr. Peter Ewart, in the second volume of the second series of the *Manchester Society's Memoirs*.

From experiments made by Mr. Ewart, he was led to conclude, that the velocity of the water at the orifices could not, when the machine is kept from moving, be in any case greater than that due to "8 of the pressure, that is, one fifth of the force of the water is lost in its passage through the upright tube, arms, jet-pieces, &c. Suppose, now, the machine to be revolving at a speed the double of that which a heavy body requires in falling a distance equal to the height of the fall; the united pressure arising from the weight of the column of water, and the centrifugal force, will, in this case, be five times greater than the pressure due to the velocity at which the water flows from the orifices, when they are kept at rest, or which is the same thing, it will be four times as great as the pressure due to the height of the fall. But as the velocity due to a pressure four times greater than the height of the fall is the same as the speed we have supposed the machine to be revolving at, the speed of the water through the smallest part of each orifice will be equal to that of the machine; consequently, the water will drop from the orifices, when they are in motion at the speed above named. This shows that the whole force of the water is required to maintain a speed in the machine, twice as great as the velocity a heavy body acquires in falling a distance equal to the height of the fall; consequently, the velocity of the orifices, when the effect is a maximum, must be somewhat less than that due to four times the height of the fall. It would occupy much space, to very little purpose, to give the investigation in full; so I shall just state, that Mr. Ewart has made it out, that when the effect is a maximum, the speed of the orifices will be 6-3086, multiplied by the square root of the height of the fall in feet, and 55-29 per cent. of the power of the water will be the power which will be obtained from the ordinary Barker's mill, when working at the velocity last named.

REVIEWS.

Blunt's Civil Engineer and Practical Mechanic. By J. BLUNT, Esq., C.E.

We have received a Number of Mr. Blunt's elaborate work, now in course of publication, under the above title; the object of which appears to be the collection of authenticated details, with plans and drawings, of difficult undertakings, with the view of enabling future engineers to execute similar works from data here collected, and to disseminate the latest improvements in engineering science. The part under notice contains clear and well-annotated plans relating to the Thames Tunnel and Shield, by Sir I. M. Brunel, Esq., and also plans and description of land and marine steam engines, cranes, and dredging machinery, by Messrs. Russell—the great weight to be attached to whatever emanates from such authorities, is sufficient at once to show the utility and importance of the work, and cannot fail to establish it as one of standard reference and sterling worth. The work is profusely executed for the use of engineers, draughtsmen, manufacturers, and operative mechanics, in each of whom (but to the engineering student in particular) it must prove of the utmost consequence, and we have no doubt will, ere long, be considered a desideratum in all engineering libraries, as consisting of practical examples, in their entire detail, from the great works of British and foreign engineering, accompanied by full reports, specifications, estimates, and journals of progress, and the formulae, calculations, tables, &c., in use, by the first authorities, illustrated by working plans and general views, from original drawings of great practical accuracy and careful execution. In conclusion, we may add, that Mr. Blunt appears eminently qualified for the efficient performance of the responsible task that has devolved on him in conducting, to a satisfactory termination, this great work, to which we wish the utmost success.

A Practical Treatise on the Laws, Customs, and Regulations of the City and Port of London, as settled by Charter, Usage, By-law, or Statute. By ALEXANDER PULLING, Esq., of the Inner Temple. London: Stevens and Norton, Bell-yard, Lincoln's Inn.

We have perused this work with the greatest satisfaction, and must confess that we are surprised how so much valuable and interesting information, in addition to that previously known on civic laws and customs, could have been acquired; but the result of Mr. Pulling's labours, in the volume before us, is evidence of what close application and diligent research can accomplish. We perfectly agree with the author, in asserting, that from several old works in existence, commencing with that written by Sir H. Calthorpe, Recorder of London, in 1649, consisting principally of abstracts of the charters and decided cases upon ancient customs, a number of modern publications have been compiled, which, with very few exceptions, are remarkable only for their inaccuracies, and, for the most part, any of no practical use; either to the citizen or the lawyer; but Mr. Pulling has succeeded in the production of a work that must hereafter be considered of the first importance, not alone to those concerned in the disposition of civic legal questions, but to all who are interested in the customs and regulations of the many institutions in the vast commercial port of London, as it can be consulted with advantage on all points (traced historically and traditionally) connected with their constitution and management. The author has been most successful in producing, what must be considered a great advantage in such a work—a carefully digested and well-arranged index; and we must commend him on the perfect manner in which his intentions, as expressed in the preface, have been carried out. He there states—"A good index is often one of the most valuable portions of a work, and for a book of reference, like the present, it is peculiarly desirable, and the author has, therefore, attempted to supply that desideratum; but it has been also deemed advisable to prefix, not only an ordinary Table of Contents, but Tables of Decided Cases, and of the Charters and Statutes which have been cited, with a short statement of the point to which each of them refers."

We have endeavoured to give our readers an idea of the character of the work, and, as the nature of its contents precludes our making extracts, we may state, in conclusion, that, as we consider it a valuable addition to our works of reference, we cordially recommend those who wish for knowledge in connection with civic institutions and customs, whether professionally or for amusement, to avail themselves of Mr. Pulling's excellent Treatise, as the most comprehensive of the kind we are acquainted with.

BURNING LENS WORKED BY THE DRUMMOND OR OXY-HYDROGEN LIGHT.

LEANT.—Within the last week, a colossal burning lens, three feet in diameter, and weighing 5 cwt., has been erected in the Royal Academy Gallery, intended to be worked by the Drummond, or oxy-hydrogen light. Last night some private experiments of this power of the Drummond light took place, when it was found that the bulk of a differential thermometer introduced into the focus, at a distance of sixteen feet, was easily affected, and a piece of phosphorus introduced in the same point was fused. It has long been asserted that the heat accompanying light obtained by artificial means does not produce heat capable of being transmitted and concentrated through lenses; the experiments of last night fully prove the contrary.

EXTRAORDINARY BLAST.—The stupendous works now proceeding for the formation of the South-Eastern Railway between Dover and Folkestone are rapidly progressing, and extensive preparations are making to throw down a large portion of Ramsgate cliff, just beyond the Shakespeare Tunnel, to make way for the sea wall. On Thursday and Friday evenings last week experiments were made by the miners below the cliffs, under the superintendence of Lieut. Hutchinson, and Colonel Pasley is expected to be present at the grand operation; this blast is to be effected by the enormous charge of 15,000 lbs. of gunpowder; it will be exploded by the electric spark from a galvanic battery, carried by conductors 1000 yards in length. The experiments have hitherto been quite satisfactory, and it is expected at once to dislodge a portion of the cliff many tons of thousands of tons in weight.

FISHES REMOVED.—A large collection of the fossil remains of animals, which animals have been found in a grotto at Faversham in Kent, in the Straits of Dover. They comprise the jawbones of the hippo, tiger, panther, and bison, some very large and long bones, and also some bones of a species of bear, which, according to Cuvier, is no longer in existence.

NEW MOVING POWER.—ELECTRO-MAGNETIC EXHIB.

SITUATION.—**M. R. DAVIDSON**, of Aberdeen, begs respectfully to intimate that his **ELECTRO-MAGNETIC ENGINES**, with a variety of other amusing and interesting experiments, continue to be **EXHIBITED** in the **EGYPTIAN HALL**, Aberdeen, and will be forward to the **same** magnitude all previous attempts of the same kind.—Open from Twelve till Four, and from Seven till Nine.

Admission 1s.—Children, 6d.

IMPORTANT TO THE SUBSCRIBERS TO ART UNIONS.

In consequence of numerous inquiries, the committee of the **ROYAL POLYTECHNIC INSTITUTION** have the pleasure to announce that the **ART UNIONS** are now open for the reception of contributions, and that the same will be forwarded to the **ROYAL POLYTECHNIC INSTITUTION** as soon as they are received.

the GENERAL MEETING of ARTISTS and others, held at the Freemasons' Tavern, on Saturday evening, the 17th inst., had no reference whatever to this A.S. SOCIATION.

EXTENSION OF THE PRINCIPLE OF ART UNIONS.—

2. The ROYAL DLYTECHNIC UNION of LONDON will, on the 22th of this month, be prepared to show to its subscribers and to the public, some specimens of the FINISHED ETCHINGS illustrative of the "SONGS OF SHAKESPEARE," and on the second or third week in January next, will present to each subscriber of 2s. (a sum not more than half the price in the usual mode of publication), this Original Work complete, bound in an ornamental cover, consisting of Thirteen

etchings, on Ten Steel Plates, by the members of the Etching Club, who have adopted an ENLARGED SCALE as compared with their admired edition of the "Deserted Village." The committee think it right to call the particular attention of the public to the prospectus, in the arrangement of the prizes to be drawn on the TWENTY-FIFTH DAY of APRIL next, and to other distinct advantages to be had of the secretary of the ROYAL POLYTECHNIC INSTITUTION.

EUROPEAN LIFE INSURANCE COMPANY.
No. 10, CHATHAM-PLACE, BLACKFRIARS, LONDON.
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DAVID FODGO, Secretary,
N.B.—Agents are wanted in towns where none have been yet appointed.

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 Capital £100,000—with 1000 shareholders enrolled.
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And seventy-two other Members of Parliament and gentlemen.
JOINTY DIRECTORS.—Upwards of 170 gentlemen, landed proprietors, or otherwise
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COMMON INSURANCE at the usual moderate rates.
INSURANCE OF LIVES on an equitable scale of charge.—Endowments of all kinds
 for future or existing children.—The usual commission to solicitors.
 Agents are appointed in all the principal towns in the kingdom.
 W. SHAW, Managing Director.

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Capital £200,000.
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 & William Burnett, M.D., K.C.H., F.R.S., Inspector-General of the Navy, &c.
 & Matthew J. Tierney, Bart., M.D., K.C.H., &c.

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 Grosvenor street.
 A. Waddilove, D.C.L., Doctors'-Com.
 R. C. Wyllie, Esq., 103, Pall-mall.

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John Purssord, Esq., Chester-terrace, Regent's-park.

Joseph Radford, Esq., Green-street, Green-vicar square.
J. Stirling Taylor, Esq., 14, Upper Gloucester-place, Dorset square.
Martial L. Welch, Esq., Wyndham-place, Bryanstone-square.
STANDING COUNSEL—J. Shapiro, Esq., Lincoln's Inn.
BARRISTERS.
Messrs. Bosanquet and Co., Lombard-street; Messrs. C. Hopkinson, Barton and

Co., Regent street; Sir Claude Scott and Co., Cavendish-square.
SOLICITORS—Messrs. Richardson, Smith, and Jones, 28, Golden-square.
DEPARTMENT OF MEDICAL STATISTICS—Wm. Farr, Esq., General Register Office.
ACTUARY—F. G. P. Nelson, Esq.
This office is provided with very accurately constructed Tables, by which it can
INSURE UNBOUND LIVES on equitable terms.

Similar Tables enable the Society to grant **INCREASED ANNUITIES** on Unsound res—the amount varying with the particular disease.

Members of Consumptive Families assured at equitable rates.
HEALTHY LIVES are assured on Lower Terms than at most other

MR. HENRY ENGLISH, at the suggestion of several friends
interested in Mining Operations, having determined on taking upon himself
business of MINERAL SURVEYOR and ESTATE AGENT, will be known to

Mr. English has availed himself of the services of experienced agents of high repute in Cornwall, North and South Wales, and Ireland, as also in the North, with a view to the examination of mines and collieries, and reporting thereon, to whom surveys may be confidently submitted, and their opinions taken on the subject.

Mr. English is authorised to possess or—
one share in Trewavas Mine, Cornwall,
one share, or 160th part, in Gwynan Mine, Cardiganshire,
his interest in Crown Royalties in this same district—does one-tenth.

steam-engine, 40-inch cylinder, with two boilers, &c.
 twenty-one fathoms of 12-inch pumps.
 steam-engine, 20-inch, double power, 8-foot stroke, with cage, or winding ap-
 pulst, &c.
 pumping engine, 36-inch cylinder, 9-foot stroke in cylinder, exclusive of boiler.
 pumping engine (Hims's), 40-horse power, with cast-iron stamp, axes for twenty.

boards, together with stamps, frames, boxes, and others; or will be disposed of about stamps, axes, &c.

WATER QUARRY.—The proprietor of a slate quarry in the neighbourhood of Beale desires of disposing of an interest on highly advantageous terms; £2000 to £3000 will secure a regular and profitable income.

PLANT IN LAURELTON.—The proprietor of a colliery is active working, is desirous of meeting with one or more partners, not exceeding six in number, who are willing to join him in extending the workings, and also constructing a branch line railway, the cost of which is estimated at £25,000. A further floating capital of £10,000 will be required. Sales are now effected, under contract, at highly remunerative prices.

SALE QUART.—An opportunity is afforded to capitalists to embark in a share of great promise in North Wales. Every particular will be afforded on the receipt of a letter requesting the same, or personal application to Mr. Renshaw in Np.

improvement in the Manufacture of Iron. — Mr. English has authority to enter into terms with inventors, or capitalists, for the disposal, wholly, or in part, of valuable improvement in the smelting of iron, whereby a considerable saving might be effected. As the object is the introduction of the process, liberal terms will be offered.

in Ireland. The sale of *Millon* is *Millon* to work a cullery
unfavorable prospects. The end is of a superior quality, and with *grassy*
effects. The price obtained at the sale is *per cent*, above the cost
of, including royalty. The present proprietor will either dispose of his interest
in the cullery to the extent of *per cent*, on *Millon*, on liberal terms.
Contact in interview with Mr. English, to appointment.

ORDERS RECEIVED FOR
DREW SMITH'S PATENT WIRE ROPE.
BRADDALE'S PATENT FELT.
EDWARD SMITH AND BARNUM'S PATENT SAFETY FUSE.

JOHNSON'S PATENT SULPHATE OF COPPER, FOR PRESERVATION OF
WRECK IN MINES, AND ON RAILWAYS.

JOHN MOTT and EDGAR H. LEAN MINER, Carlsbad, N.M. - The Republic
in Abasco, N.M. and Captain Matthew Francis, on these mines.

... of the (company) ... be had on application to Mr. English.
... 28, Fleet-street, Door 12.

$$f_{\text{max}} = \frac{1}{2\pi} \left(\frac{1}{\tau_{\text{max}}} + \frac{1}{\tau_{\text{min}}} \right) = \frac{1}{2\pi} \left(\frac{1}{\tau_{\text{max}}} + \frac{1}{\tau_{\text{min}}} \right) = \frac{1}{2\pi} \left(\frac{1}{\tau_{\text{max}}} + \frac{1}{\tau_{\text{min}}} \right)$$
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MEETINGS OF SCIENTIFIC BODIES.

IN THE ENGLAND WEEK.

SOCIETY.	PLACE OF MEETING.	DAY.	OURS.
Zoological.	At Falmouth.	Tuesday.	5 1/2 P.M.
Pharmaceutical.	17, Bloomsbury-square.	Wednesday.	8 1/2 P.M.
Naturalists.	Bromley House.	Thursday.	7 P.M.
Mathematical.	Exeter Hall.	Saturday.	9 P.M.
Mathematical.	Crispin-street, Spitalfields.	Saturday.	9 P.M.

PUBLIC COMPANIES.

MEETINGS.

London and Croydon Railway Co.	London Tavern.	Dec. 27.	1.
Peper's Sound Agricultural Co.	4, Finchchurch-street.	28.	2.
Canada Company.	St. Helen's-place.	28.	3.
Colonial Bank.	London Tavern.	Jan. 3.	1.
Westminster Medical.	Exeter Hall.	Jan. 3.	12.
Royal Exchange Mining Company.	28, Broad-street-buildings.	4.	1.
Anglo-Mexican Mint.	9, New Broad-street.	4.	2.

CALLS.

Mexican Mining Company.	1/4s. per share.	Dec. 31.	As usual.
Newcastle & Darlington R-way Co.	5s. per share.	Jan. 2.	At R. C. Glyn and Co.
London & Birmingham R-way Co.	1/4s. per share.	10.	As usual.
Great Western Railway.	5s. per share.	12.	As usual.

DIVIDENDS.

Bank of British North America.	14s. per share.	Jan. 3.	St. Helen's place.
National Provincial Bank of England & Scot.	112s. 6d. per cent.	12.	St. Helen's place.

NOTICES TO CORRESPONDENTS.

The Mining Journal is regularly published about Two o'clock on Saturday afternoon, at the office, No. 20, FLEET-STREET, where it can always be obtained, and there is no cause for irregularity in its supply, in towns, other than neglect on the part of the agent through whom it is ordered; but, as respects its transmission to country subscribers, the blame is shared with the Post-office authorities.

More extensive premises than those lately occupied being found necessary, the establishment of the Mining Journal is REMOVED TO 26, FLEET-STREET (opposite St. Dunstan's Church).

Our next Number will be accompanied by a SUPPLEMENT, which will enable us to publish a great quantity of Original Correspondence, together with many interesting scientific papers and articles, which have unavoidably accumulated upon us. The Index, Title-page, &c., for the volume, will also be given next week. We trust this notice will prove satisfactory to those of our correspondents whose communications have not, of late, met such regular insertion as we could wish.

VENTILATION OF MINES.—We have to acknowledge the receipt from our esteemed Belgian correspondent, of a very important paper, on an Improved Plan of Ventilation, with diagrams, which shall appear in the Journal on the 7th of January next. The other communication is inserted in our present Number. We need hardly add, that such information is to us most acceptable, and we shall be glad to hear frequently, either from Mr. Taylor, or those of his engineering friends he may be enabled to induce to add to the value of our columns, by furnishing papers for insertion.

Mr. Harton's paper on the Relative Properties of Iron made by the use of Cold and Hot Air Blast in the smelting-furnace, will be published in our next.

The letter of "Electricity," in reply to those in our last Number, signed "An Engineer," and "Electro-Magnetism," on the subject of Electro-Magnetism as a Moving Power, arrived too late for insertion in our present Number.—"Geologists," on the History of Coal, is also necessarily again postponed.

THE MINING JOURNAL,
Railway and Commercial Gazette.

LONDON, DECEMBER 24, 1842.

* Parties desirous of ordering the Mining Journal, can do so, either direct to the office, or through any news-vender or bookseller in town or country. Notices of irregularity in its delivery are requested to be forwarded to the office, where every attention will be made to rectify the cause of complaint.

The letters which appear in our present Number on the question of the smoke nuisance, or prevention, from Mr. C. W. WILLIAMS and Messrs. DIRCKS and Co., are well deserving of attention, but as we have been favoured with a letter from Mr. JOSEPH SMITH, on the part of Mr. BILLINGSLEY, we are disposed to defer our observations until our next. The communication of Mr. WILLIAMS, however, as applying to the remarks made in the Journal of last week, call for notice, which shall appear on receipt of his promised paper, while he must allow that we are right in the view taken by us as public journalists—that of considering the merits of his patent only so far as may be of interest or advantage to the community at large. Mr. C. W. WILLIAMS shall have perfect fair play, by insertion being given to any articles with which he may favour us, whether they accord with our views or otherwise.

It is hardly to be expected we can entertain the same opinion as himself, on subject of his patent, while we are ready to admit its merits and priority of claim, to which, although that gentleman appears to attach but little importance, is one, in our estimation, of the first consequence, even so far as he is individually interested in its application.

In the law proceedings reported in our present Number, will be found the case of "CURTIS v. the Blackwall Railway Company." We are induced to direct especial attention thereto, from the nature of the evidence put forward on the part of the company, not only to be regretted as emanating from a public body, but reflecting so much discredit on engineering science in that of Mr. STEPHENSON, who was employed by the company as engineer.

The facts are simple, and easily told. Mr. CURTIS having taken out a patent for a contrivance, whereby the rope might be "gripped" while in action; the plan was caught hold of by Mr. STEPHENSON, and applied to the Blackwall line; the question arose of patent right—the company defended the action, and brought Mr. STEPHENSON as their witness—the value of whose evidence may be estimated by the fact of his declaration on oath, that a man could not exert more power than 40 lbs. in raising a weight vertically. The evidence subsequently given by Mr. NICHOLAS WOOD, and also by Mr. ANDREW SMITH, that a power of 300 lbs. might be applied under the circumstances, was calculated to excite doubts in the minds of the jury as to the correctness of that given by Mr. STEPHENSON. The result, we regret to say, was in favour of the company—thus affording another instance of "might over right."

We have received several letters during the past week with reference to the Carn Brea Mines, and the proceedings of the committee appointed; but, at the request of several correspondents, who are friends of the parties interested, we defer any further notice. It is, however, only due to ourselves to say, that the remarks which have appeared in our columns are fully borne out, and that we shall readily afford space to any refutation of the charges, if the party can adduce evidence—at the same time, we may add, that we are ready to substantiate the correctness of any statements which have appeared. More might be said, but we defer further observations for a while.

It is, at all times, with regret that we direct attention to the misdoings of parties, although it forms part of our office—indeed, we should not do our duty did we not expose those, who pursue a line of conduct, which lays them open to observation. On the present occasion we are sorry to find, after the exposures which have already taken place, that Mr. THOMAS LAMIE MURRAY, of the National Loan Fund Association, should have attempted, by a legal ruse, to defeat the plaintiff in the action reported in our columns.

He does not contend that he is not in debt for "differences" arising out of certain operations on the Stock Exchange; but as stock-jobbing is not recognised in our courts of law, the question was simply, whether he (Mr. MURRAY) should perform his promise of handing over certain shares in the Metropolitan Wood Pavement Company, to which he had become entitled for certain services rendered, and to avoid which he descended to a quibble. The learned judge and jury, however, saw the matter in its proper light, and gave their verdict for the plaintiff. Such conduct reflects badly upon parties placed in the like position of the honourable defendant, whose station, as the managing director, or chairman, of a public institution, is, by such a course, calculated to do much injury.

ORIGINAL CORRESPONDENCE.

WIRE ROPE.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—I regret that the limited time devoted to the illustration of Wednesday last, at the meeting of the Society of Arts, in consequence of the private business of the society, and resignation of Mr. Graham, the secretary (then communicated) precluded me from entering into the merits and proportionate advantages resulting from the several descriptions of wire rope over that of hemp, more especially as regards mines and railways. With your leave, I shall forward for your next Number, the results of numerous experiments, and the practical observations which have been made.

ANDREW SMITH.

2, White Lion-court, Dec. 23.

SMOKE PREVENTION.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—I beg to express my obligations for your editorial remarks in the last Journal, on the controversy between Mr. Hall and myself, and the impartial view you have taken of the subject, although I think you have been rather caustic on the personal character of the dispute, seeing that such personalities were forced upon me. I regret you should have considered the discussion as having been brought to a close unsatisfactorily, and that the question is "as much at issue at the present moment;" this induces me to think that expectations have been formed which it was never intended should be raised. In my controversy with Mr. Samuel Hall, I did not undertake to discuss "the smoke question," nor the respective merits of his system or mine. Having called in question Mr. Hall's claim and merits, as regards the use of coal in locomotives, I undertook to prove the three points as given in my letter in the last week's Journal. Mr. Hall then foliowated a severe personally abusive letter, and advertised it in your Journal. My replies were confined to his specific allegations, and I am unable to see what remained to be discussed, or why the discussion should be considered as having been brought to a close unsatisfactorily; the "smoke question," or any general question, certainly, was not in issue. In your editorial remarks you observe, "the main object in which the public could feel any interest was comparatively lost sight of." I was not aware that any such object was involved in our advertised controversy, and to discuss any such object in which the public could feel any interest, through your advertising columns, would be as inconvenient as unusual. The "considerations of the claims of both gentlemen" you describe as follows:—"1. Are the patents of Mr. C. W. Williams and Mr. Hall identical? 2. If so, to whom is the merit due of originality? 3. If not identical, how far does the one infringe on the other?" Now, these may, possibly, be important questions as regards the public, or the individuals; but, permit me to set myself right in your consideration of the subject—none of them were raised or discussed, as general questions, by me; indeed, the reverse was the fact, as I was desirous of confining my objection to the single point of Mr. Hall's practice as regards locomotives. As to Mr. Hall's patent of 1836 (I omit his of 1838, as it has no relation to the subject) being identical with mine, or an infringement of it; such has never been stated; they are, in fact, as much opposed in principle and practice as the hot-blast process is to the cold-blast, or a large single orifice gas burner is to the Argand burner, with its numerous small orifices—these two examples embracing the main points of comparison. The only point of similarity or dispute I have clearly pointed out in my advertisement letter in the Journal of the 1st October, I have there said the question has two distinct bearings, "first as to land and marine boilers, and second as to locomotives. As to the first, no question is raised. As to locomotives, the case is different." The only question as regards similarity or infringement, raised by me was with reference to Mr. Hall's practice in attempting to burn coals instead of coke, in locomotives, and, as exemplified in the *Star* engine, I regret, therefore, you had the trouble of considering rival claims, with respect to patents where none were raised. As, however, I am desirous that the public should have the means of coming to a right conclusion, as regards the main question, I will, with your permission, and next week if possible, state what my patent really is; thus to enable those who cannot refer to specifications, to draw their own conclusions, and form their own opinions on the questions of identity, similarity, or infringement. If Mr. Hall and other patentees would do the same, the public would be less in the dark than they really are.

C. W. WILLIAMS.

Liverpool, Dec. 19.

[We feel assured that our valued correspondent will, on reflection, admit that we were right in the view we have taken of the merits of the smoke question between himself and Mr. Hall, so far as the public is concerned, for we are perfectly careless as to the pecuniary advantages which may arise to the one or other. We are ready to admit that our correspondent has the best of the argument, but we must say, that, in our observations, we did not propose entering on the merits of the respective patents in a chemical, but in a commercial, point of view. Mr. Williams admits that the questions raised "may possibly be important, as regards the public," and thus we are satisfied with the decision arrived at. We fully concur with the views entertained by Mr. Williams of a description being given of the real objects and merits of the patent as being highly desirable, while we have to express the gratification we feel at having brought our correspondent to "the scratch." We are well satisfied, and so, doubtless, will be our readers.]

SMOKE PREVENTION.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—Observing in your last Number another of the applications of a process said to be the invention of Mr. E. Billingsley, and which is a direct infringement of that of Mr. C. W. Williams, we feel called upon to offer some observations, leaving to your discretion the insertion of the correspondence enclosed. There are some important points to which we are anxious to direct your attention with reference to this question.

In the first place, by the local Act of Bradford, the Commissioners of Police cannot enforce the adoption of any patented plan for burning coals. In the next, there are, in Bradford, about thirty commissioners—a self-elected body—large proportion of whom have steam power; twenty of them, as commissioners, have determined to set the example of showing a willingness to abate the smoke nuisance by adopting the plan in question. With regard to Mr. Billingsley, we beg to remark, that he twice visited our specimen furnace in Fennel-street, Manchester, and from what he there saw, and from information given him by Mr. Dircks, he has been enabled to effect all we effect, merely by a different situation of the air distributors, than that which he saw at the specimen furnace, but a situation nowise different from what we can show at other of our furnaces. But we may now inquire—Do the commissioners of Bradford, or does Mr. Billingsley, or will the public, believe that the patentee was so short sighted as not to foresee that ingenious men might, by different arrangements of his apparatus, evade his patent—unless he protected himself by claiming for more than one form of, or place for, his invention? If they do, they are mistaken. We grant that Mr. Joseph Smith's letters are calculated to mislead all who read them, and, whether considering him in his public capacity as a commissioner, or in his professional capacity as an intelligent land surveyor (and not himself a manufacturer), we are ourselves perplexed to discover the origin of the self-deception he has fallen into, and which is likely to be attended with serious consequences, through his public advocacy of Mr. Billingsley's infringement; as adversary, we are sorry to say, supported alone by having recourse to representations, the honesty of which we will put it in the power of both yourself and the public to judge.

In the Bradford Observer of 15th December, Mr. Smith, in a letter occupying a column and a half, offers to "extract at considerable length from the London Journal and Repository of Arts, &c., No. 97, what Mr. Williams describes and claims, and what he does not claim, for his invention." After this announcement, we expected the most uncompromising impartiality, and, notwithstanding the discourtesy of other parts of the letter, in reference to ourselves, we expected that the public, being in possession of the "extract at considerable length," would at once be enabled to judge of the merits of the case. To our great astonishment, however, and not a little to our provocation, we found both ourselves and the public alike abused, for, out of twelve pages of extracts, not four were selected, and the vital part of the right containing pages neither extracted nor even mentioned. We ask, for what reason does Mr. Smith thus throw dust into the eyes of the public? Have not all whom his letter deceives, along with the patentee and ourselves whom it injures, just cause to complain? Mr. Smith quotes all about flattened tubes, but not a word about "flat disc-like tubes, perforated with numerous apertures"—and a word about "the admission of air by regulated slides." He never alludes to that part where the patentee says—"I do not confine myself to the particular number, dimensions, or situation, of the several parts;" and, for most of the last

enforce, another which he does give, reads almost powerless. It is this—"I especially and exclusively claim as my invention, the use, construction, and application of the perforated air distributors, by which the atmospheric air is more immediately and intimately blended with the combustible gases generated in the furnace." Does he mean Mr. Smith's quoted "flattened tubes?"—No. Or tiles?—No; for as to the form, materials, or even the situation, he is unrestricted. Nothing, we think, can be more apparent than the miserable quibbling to which Mr. Smith has lent himself, in his endeavour to extricate Mr. Billingsley from the charge of infringement, and thereby to give to the town of Bradford an unpunished smoke burner. If, after being thus explanatory, and taking every precaution to warn the public, infringements should be continued, the parties offending must, of course, take the consequences, as they infringe knowingly, and not ignorantly.

DIRCKS & Co.

Manchester, Dec. 22.

[We insert the letter of Messrs. Dircks and Co., and purpose next week noticing the communication of Mr. Joseph Smith, of Bradford, whose letter should have appeared this week, but the mass of matter conveyed therewith, precludes us from noticing it, and, moreover, the communication of Messrs. Dircks, directing attention to a misrepresentation on the part of Mr. Smith, which, on referring to the specification of Mr. Williams, we find to be well grounded; we are desirous of consulting more closely the points to which our attention should be more immediately directed.]

COMPARATIVE MERITS OF HOT AND COLD-BLAST IRON.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—I have just read, in your paper of the 3d December, a letter by one "Alpha," on experiments on cold and hot-blast iron, in which he calls for further and extensive experiments on the subject of the comparative strength of hot and cold-blast made iron. I am well aware how very fertile a subject of "sharp controversy" this has proved, especially when the arguments have been drawn from what are called "experiments"—that is, trials made with nine little bars of cast-iron, which, no doubt, have been conducted and treated in the most careful and "scientific" manner, with weights nicely laid on, deflection measured to hundredths of an inch, and such like evidence of a desire to get at true results; doubtless, this hath been done with all due care and right truth-seeking spirit by both parties (for party work hath even got into this matter). But, without desiring to cast any reflection on the effect which the interests of each has had upon their judgment, I would just remark, that the very contradictory results which both have given forth, proves that these scientific experimenters have not had their zeal rewarded by results upon which practical men can either depend, or reason with, their everyday experience, which, with the most earnest desire to be impartial, I must say, is decidedly in favour of cold-blast iron. May I beg of you just to attend to what I am about to say, which is this, that while all these scientific experiments have been making, ever since hot-blast iron came into use, experiments of the most true and real class have been going on daily in every foundry in Britain; on the comparative strengths of hot and cold-blast cast-iron, and these experiments, too, Sir, are of the most true and important class, inasmuch as they have been made upon objects and forms and applications of the iron in question, which, from the very nature of the case, was a true test of the quality of the iron in the way in which its quality, as to strength, was a matter of the first importance. It is a well-known fact, with every practical iron-founder, that castings made with hot-blast iron, from patterns which used, with cold-blast iron, to yield castings perfectly sound, and capable of standing the strains and forces they were subjected to, now, when castings from them are done in hot-blast iron, cannot stand the duty they used to do, and will still do, if the castings be done with cold-blast iron, as formerly. That this is a fact any experienced millwright or founder will testify; and more so, for, since hot-blast iron came so much into use, because of its less price, the frequency of sprung castings hath become so common, that, for any particular casting, where, from its peculiar form, a certain likelihood of different degrees of contraction was apt to take place while the casting was left to cool in the sand, as is the usual practice, such casting, if done with hot-blast iron, was certain either to have "down"—that is, pulled itself to pieces in cooling—or, what was worse, fly in two or more places, perhaps, after much costly work was laid out upon it. I say, Sir, the frequency of such distressing losses and annoyances hath so stamped hot-blast iron with its true character, that its market value, as compared with genuine cold-blast, pretty clearly indicates that it is beginning to be found out, and its character known. I repeat, again, Sir, that the every day practice of every experienced millwright and iron-founder is the most satisfactory experiment on the subject; and if, instead of spending sums of money in worse than useless trials at iron-works, you would collect the individual evidence of every iron-founder in Britain, you would do more to settle this discussion than all the scientific experiments that ever can be made during our lives. I have, in these remarks, confined myself to the one question of comparative strength, but if you could also know the loss in melting in the cupola, which is so heavy a charge against hot-blast, you would then find another very ugly feature, which has also helped it to take its low position in the market value, to say nothing of the provoking, because uncertain, degree in which it contracts in cooling, after being cast, to the great annoyance of the engineer and millwright. One peculiarity it has—and I will admit a valuable one—is its being very fluid when melted. This renders it very fit for casting pots and pans and ornamental castings, such as stoves and grates, and it may be said, with some advantage by reason of that fluid quality to mix with cold-blast strong irons (which run more thick), but this mixture, in every case, merely gains fluidity at the expense of strength—in short, every unprejudiced man, who will prefer experience to mere opinion, will see the reason why hot-blast iron can be bought, at all times, at so much less price than cold-blast—just because it has no other chance of displacing cold-blast than that of its less price, which, in so many cases, enables a contractor who cares not for strength and durability to out-bid one who will do things in the best possible style. I am afraid, Sir, I have extended these remarks far beyond the bounds of your indulgence, but if you will but make room for them you will please many a practical man.

STEPHEN KINN.

Manchester, Dec. 16.

ON THE FORMATION OF MINERAL VEINS.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—Mr. Deakin, in his reply to my last letter, avails himself of rather disingenuous means in order to escape the force of the strictures to which he had laid himself open. To excuse himself from the charge of condemning opinions and statements, which he himself declared "he could not understand," he now says that "geologists themselves cannot understand each other, for, let them be as numerous as they might, they all differ in opinion." A pretty specimen of reasoning! Because geologists are supposed to hold different views as to the formation of the crust of the earth, they are to be set down as "not able to understand each other." Must I tell Mr. Deakin that there is a wide difference between dissenting from certain opinions and conclusions, and not being able to comprehend or understand them. With respect to the assertion of the inability of the people of Leeds to understand a lecture on the theory of mineral deposits, Mr. Deakin now finds it convenient to shift his ground, and to say that it is of "mining and minerals" that the people of Leeds are as ignorant as himself. If he merely means to say that there are many men in Leeds who are not practical miners, who would think of disputing his assertion? but I must again object to his making his own capacity the standard of that of others; and I will be bold to say, that there are hundreds of men in Leeds—working men—quite capable of understanding a lecture on geology, and without being practical miners—able to weigh geological evidence, and to form right conclusions on the theory of the formation of the earth. Reversing Mr. Deakin's proportions, I do not think that one in five hundred could be found to qualify himself so far as first he owes his incapacity to understand an argument, and then declares it "anomalous." Mr. Deakin, in his last communication, says, with regard to the upthrow near Leeds—"I am talked to as though I thought it had taken place—I believe so much thing." Compare this with his first letter, where he says—"A great upthrow in the strata of 1200 feet would just do what Mr. Beckfield said it had, but, before that upthrow took place, these very coals were then speaking of water buried very deep in the earth." Mr. Deakin must have a bad memory. Mr. Deakin asks me if I find anything true in his theory of mineral distribution. It is true enough that the coal formation is found on the mountain limestone, but was ever disputed that? Did not geologists, on that very account, give the limestone the name of "carboniferous" or "coal-bearing" limestone? Mr. Deakin may next tell us that he had adopted a theory that the moon was not made of cheese, and when assured that we can find nothing new in that, he

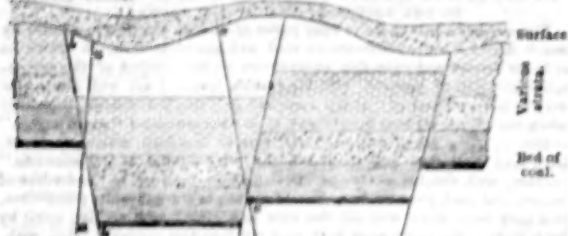
will turn round, and say, very gravely, "I beg leave to ask you if you can find anything true in it, and if you can, you had better let it alone." I now leave Mr. Denkin in the hands of "A Workman," with whose letter, in your last Journal, I have been very much pleased. My main object in taking up my pen was, to point out the inconsistency and arrogance of Mr. Denkin's first letters. It is quite certain, that discussion with him on the formation of mineral deposits would have no effect in changing his opinions. I, therefore, bid him farewell, and long may he live to enjoy his opinion, that the earth is at the present moment precisely in the same state, as when first called into existence. To be consistent, Mr. Denkin, of course, holds the orthodox opinion, that the sun turns round the earth. So be it, if Mr. Denkin insists upon it.

Dec. 19.

ON THE FORMATION OF MINERAL VEINS.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—Having already given a description of "dykes," I now beg to hand you a few particulars as regards "slips," or slides, which are met with in coal fields. These "faults" have been not inaptly termed "dislocations," for if the depressed portions could be lifted up to the elevated parts, they would fit them in as great a nicety as any joint that was ever made; and not only the coal seam would so fit, but the underlying and overlying rocks show an equal fitness to each other. Under is a sectional sketch of slips met with in a coal field:—



Whatever may be the fact, it must be allowed that appearances are strongly in favour of the theory, or rather hypothesis, that a "bursting" and heaving up has taken place; the slanting position of the "slips" is an important feature. It will be perceived, by examining the above sketch, there is an opening out, which circumstance is not unlikely to be the result of an upheaving. Had the break in the strata been at right angles with the bed of coal, as the line *aa*, or if it had even been found that a "downthrow" and "upthrow," when alternately met in driving a level, had the same inclination—viz., as in the preceding sketch, No. 1, & 2, and No. 3, as *cc*—these cases would, no doubt, make against the theory; but such has not, I believe, ever yet been met with. To those who will admit of circumstantial evidence, the theory advanced by "Geologists" is as clear as need be. The "slips" in the metallic veins follow the same rule as those in coal seams. The slide (see sketch) forms an acute angle with the "seat," or floor, of the bed of coal, when a "downthrow" is met, and when the slip, or slide, forms an acute angle with the roof or "hanging wall," the vein, or seam, has gone in that direction; but as the metallic veins are usually more vertical than coal seams, then the pressure which caused the dislocation must have been lateral: apparent lateral pressure is also often observable in the coal formation. The natural laws of stratification and mineral deposits may be well understood, and, at the same time, very great practical mistakes occur in mining. If a "slip" is taken to be a "nip," or a "slide" for a "horse," and the captain not well accustomed to the "saddle," he will get a "heave."

Dec. 12.

A WORKMAN.

[As this subject is creating considerable interest, and as it will, we know, be followed up by other communications, we should hope that Mr. Hopkins will see the propriety of replying to the observations made, as also to explain his theory in more clear terms than such as have been presented.]

ON THE FILLING OF MINERAL VEINS.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—I have read with much pleasure Mr. Hopkins's theory of geological phenomena in general, and of the filling of metalliferous veins in particular. At this period of the inquiry it is impossible to deny positively the inference he draws of the lodes taking their metal from the strata inclosing them, but yet it seems equally probable that the veins may be filled from below. According to the best authorities, the heat of the earth continues to increase in depth, so that, at a certain distance, the interior will be a molting mass of lava. If this be the case, and the lava is mixed in any degree with metals, it is possible that this molting mass will be giving off continually metallic gases, which would naturally find their way to the surface by apertures, or any means of escape. If we consider veins as channels for conducting this matter to the surface, various parts of them being more open than others, you will find branches of ore in these natural chimneys perhaps crystallised by electricity; you will find those branches thicker when the surrounding rock of the country sets as a good conductor, and thinner where it acts as a bad one. This view of the case is also supported by the gossan on the top or back of most courses of ore, denoting a discharge of heat or some other power from the interior, by which the red and burnt appearance on the surface of the lode is caused; and, further, by supposing this to be the case, the seat of supply will be lower than human ingenuity can reach, and that ingenuity may be stimulated for ages, in getting a supply of metals from the lower regions of the earth's crust for the succeeding generations of mankind. I should be glad to see Mr. Hopkins's, or any other gentleman's, opinion further on this subject.

Aberystwith, Dec. 21.

CYMRO.

THEORY OF MINERAL VEINS.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—Answers to the several questions of "S. R. P." will be given as the space of the Journal will permit, the object of "Geologists" being to give original observations, in preference to the recorded opinions and facts of others. Will this gentleman explain the meaning of the primary *sediment*, not according to the laws laid down by Sedgwick, or any other learned theorist, but according to the laws of Nature, as manifest in the present era? "Geologists" admit that there is a marked difference in schistose, or sedimentary deposits, in conformation, character, and disposition; but he must explicitly repudiate the term *primary*, as applied to any class of rocks or sedimentary beds of the earth, and "S. R. P." has yet to learn, that this observable difference is not the mark of age, but of the varied operations of Nature, the moving cause being the tidal currents, which convey these matters into lakes and seas, and the difference being produced by the varying specific gravity of bodies: thus, the sedimentary deposits brought down by tropical rivers are most commonly sands, in all periods of the year, and animal and vegetable matters held also in suspension by the waters; in the flood season the sands are washed further from the discharge of the river, covering the previous sedimentary deposits; the vast volumes of mud and floating masses of heavier matter are precipitated on the ocean bed on each side of, and sometimes within, the tidal line, causing the delta, or tract of land, to encroach continually on the sea, and the lighter particles are generally diffused over a vast area, falling upon the ocean bed, and forming, in union with oceanic matters, beds varying in extent, according to the sum of matter derived from the earth. The shores of the delta are sometimes precipitous, but in general they incline towards the bottom of the sea; thus, in forming, certain portions of the precipitated matter, are disposed, as Mr. Hopkins maintains, in a vertical position, but the periodical accretions of matter being filtered to the surface, and give that universal parallelism common to deltas, and what are erroneously termed *alluvial plains*: thus, from the Alleghany Mountains to the Atlantic Ocean, from the province of Aikabahal, to the Indian Ocean, there is a continued increase in the depth of the soil to the shores, and these shores usually encroach upon the waters; the same phenomena is observed at Des Moines, for, close to the sea, the blue clay, in a succession of beds, differing from each other, is from 800 to 1000 feet in thickness, descending towards the mountains, until it finally disappears. Again, the delta of Egypt presents the like appearance, and, in addition, exhibits, in horizontal plates parallel to the horizon, the annual depositions which have taken place for ages past. In those vast depositions the irregularities of the ocean bed are concealed from the view, when the submarine hills are of magnitude, and then it is they continue to protrude through the whole bed, receiving new qualities from the soil by which they are surrounded. In extensive lakes the fine sedimentary depositions assume deposits

on the form of the bases on which they rest, and on the causes in action, and the like is observable in quiet seas; but, where the action is conjoint—for instance, where the coral insects are forming lines of hills—the valleys and plains are filling up with beds of shell-fish, reliques, and a calcareous sediment, purely oceanic, or blending with terrestrial deposits, the nature of the local admixture determining the nature of the sedimentary bed, there being, of necessity, numerous varieties, locally disposed and contemporaneously produced. Such are the phenomena of the present day, and such were they in past ages, the lower schistose beds of this country, and the schists, covering the granites of the Apennines, being, in all probability, produced in the same era, with many of the crowning deposits. The same remarks apply to *primary* sandstone, which, in numerous instances, is contemporaneous with the limestone on which it rests, preserving its pure silicious origin, or receiving varying matters from succeeding depositions, or from the overlying bed. There are, undoubtedly, many exceptions to this rule of Nature, for we often find the strata contorted, undulating, or vertical, and even granites are not exempt from this, for many aggregate masses are dome-shaped, with a corresponding lamination, which, on dissection, peels off like the coating of an onion; others are perfectly tabular and laminated, like gneiss. "S. R. P." it is presumed, is acquainted enough with these matters, to know that sedimentary depositions in quiet lakes, or estuaries brought in by rivers, must settle in conformity to the bed on which they rest, leaving bare the prominences only, and, consequently, they may form more or less vertical by *mechanical* deposition, and that the total absence of organic remains is no proof of antiquity. A further explanation will be given on some future occasion, but "S. R. P." must understand that "Geologists" write to receive as well as to impart information, and is open to conviction at all times.

Dec. 21.

GEOLOGICS.

FORMATION OF MINERAL DEPOSITS.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—Pray, who is Mr. Hopkins? I say, Mr. Editor, what a power his theory has given the geologists! All the former favourite theories of mineral veins being filled by apheaves and downthrows, knocked as dead as a door-nail. Who should have thought that the great secret of lodes being filled *sideways*, and not at top and bottom, should only just now have been found out? And, judging by precedent, we think this theory will hold good among the schools, until it becomes discredited by that great spoiler of novelties, common-sense. But why should not Mr. Hopkins make discoveries as well as other people? Who knows whether he did not glean his idea from some surface operation, such as seeing a barrel filled at the bung-hole? Should his theory be rejected, your geologists will be driven to their last shift, of deciding that the lodes were filled at one end, like a hog's pudding. Really, Sir, the subject is too preposterous to be received seriously, and it is certainly a shame to the age we live in that such gross absurdities should obtain the countenance of rational men. Allow me to ask the geologists, what is their objection to the doctrine of the ore, lodes, and country, having been all created at one and the same period? Can't you fancy, Mr. Editor, that you hear the simultaneous shout of contempt at the bare mention of this notion? Why, if this rule were adopted, they say, anybody might understand geology! Away with it—it is common—it involves no impossibilities—it has not even a contradiction to reconcile—and, consequently, there would be no field for the display of those master talents in the rare art of mystifying, and making falsehood assume the resemblance of truth. Now, Sir, I have no fear in stating my persuasion, that I shall be borne out by many of my mining brethren, in declaring that there exists ample and incontrovertible proofs that it is *impossible* to reconcile any other theory, but that of the whole mass being a contemporaneous formation. Your anonymous correspondent, "A Workman," is hardly entitled to attention. The quotations or extracts he has made proclaim his utter ignorance of the subject, and clearly show that he is incapable of distinguishing between a plain historical account and what is merely figurative, or allegorical, in which the Sacred writings abound. When the Theosophists exclaimed, "These have turned the world upside down" are come hither also, "I think none but 'A Workman,' who ought to be ashamed, would have supposed that half a dozen men had capsize the globe! Lastly, I have only to notice your valuable correspondent, Mr. U. Thompson, and I beg most respectfully to assure this gentleman, that if he can point out a single instance wherein mining has been benefited by scholastic geologists, I will readily subscribe to it.

Cullington, Dec. 19.

JOHN BUNDS.

[Our correspondent commences his "conglomerate" production by saying—"Pny, who is Mr. Hopkins?" We have, in reply, to state, that a paper, by that gentleman, is now before the Geological Society, which, when read, will, doubtless, inform our correspondent and others who he is, and what are the bases of his theories, which we have reason to believe will be demonstrated by the results of practical observation.]

TALACRE COAL AND IRON COMPANY.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—I have noticed the report of the proceedings at the Court of Aldermen held on the 10th inst., for the purpose of investigating the charges made against Alderman Thomas Wood; and I must confess, I much fear from what then took place, this investigation will not prove satisfactory to the public. The facts stand thus—Ald. T. Wood has solicited this investigation to clear his character; he invites, or pretends to invite (to use his own words) the most rigid and most searching inquiry; now, if he really means this, what does all this *flattering* and *quibbling* mean? If he is honest, he can prove it, and his opponents cannot prove the contrary; therefore, I say again, if he is honest, he may at once, and without fear or further quibbling, appeal to a document in existence—a public document—I allude to the report made by a very respectable solicitor (Mr. Ashurst) to the shareholders of the company, in his capacity of their solicitor. The Alderman is bound to challenge and meet that document, and Mr. Ashurst is bound to defend it, or admit it is false. The Alderman is also bound and will (I think if he really intends to prove his honesty) challenge your charges, the only excuse that I have ever heard he has made to his brother Aldermen, for not having done so hitherto, was the great expense attending it—that excuse will not now apply, he having before this tribunal the opportunity of doing so without incurring any. Now, with regard to the learned friend—I expect I might say learned friends—of Mr. Ald. Wood; he, as a solicitor, and a clever man, cannot want their assistance to explain his own accounts, although they may (if they are allowed, assist him much in mystifying the inquiry. Referring again to the Court of Aldermen, in what situation are these gentlemen considered? They say they are not the prosecutors—Are they, then, the judges? Ald. Wood, I expect, would rather they felt themselves in the latter capacity; if so, then, who is to investigate, and cause this searching inquiry so earnestly solicited by him? Are the Aldermen to take his explanation (which, no doubt, will, if required, be on affidavit) as sufficient, after a few questions from them; and beyond that I much fear the Aldermen will feel it too invidious a task to press him. Now, Mr. Editor, I cannot help thinking it is the duty of the sufferers to come forward, and offer every assistance within their power to the court, and, if judged necessary or proper (which I think it is), to propose some eminent barrister, or other person, to assist the Aldermen in their investigation and examination of parties, and if this is deemed necessary, certain funds will be wanting to defray the expense thereof. Upon this point I beg leave to add, that although, from my retired habits, and little knowledge of business, I cannot take an active part therein, yet, if it is thought proper to do so, and notice thereof is given in your paper, my wife shall be immediately forwarded to the proper quarter, being

London, Dec. 20.

ONE OF THE SUFFERERS.

[We are really disgusted with the shuffling manoeuvres of the legal Aldermen. We have done our duty, so far as exposure goes, and in attracting the attention of the public and the "divine wisdom." Let the "sufferers" come forward; surely Mr. Shaw (of Colchester), Mr. Wells (of Nottingham), and others, will, before the next week in January, or some earlier, if not to obtain redress, at least to expose the vicinity which has attended all the operations of the Aldermen, as relates to the Talacre Company.]

ACCIDENTS ON RAILWAYS.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—There appears to be some difference of opinion existing as to the propriety of the verdict given in the action brought by Dr. Carpenter against the Brighton Railway Company, some contending that the matters are not to be responsible for the acts of their servants, and others requiring evidence which none but those in fault can give. I, for one, cannot mind readily to the compromise in your last Number, and think the inquiry you institute a very proper one, so in what measures were taken to provide for the safety

of those who were victims, and cannot but express my sense of disgust at men who, as directors of any company, can shamelessly come into court, and waste the money of the shareholders, in contesting a point which "common feelings of humanity" should have spared them from. Having said thus much of the London and Brighton directors, what are we to say to the conduct of those of the London and Birmingham Railway, by the accident on which, within the last few days, life has been lost; and allow me here to inquire, under what circumstances? and we shall then see whether culpability attaches to the directors or otherwise. The case, as reported in the papers of the day, is, that the accident took place on an embankment fifteen feet high, the engine and load having been precipitated over the embankment, making its way through some slight posts and rails; the engineer and stokers appear to have had a miraculous escape. The safety-valve, we are told, "acted extremely well," as the boiler did not burst, and there was but little steam generated after the overturn. One life has been forfeited, with every apprehension of a second, and it is only a mercy that, by the bursting of the boiler or other fatuity, one lived to tell the tale. Let us now come to the cause of the accident, and here it is that I think you will admit, with me, there was great culpability on the part of the administrators of this line. The engine was a four-wheeled engine, the axle was defective, a second-class carriage was placed immediately next the engine, and, to extricate those injured therein, after the accident, it was necessary to saw open the top of the centre division. Now, upon these two points the culpability of the directors rests. A four-wheeled engine was the cause of the fatal accident at Versailles—a four-wheeled engine has been deprecated by the Inspector of Railways, Sir F. Smith, as being subject to accidents under similar circumstances to the present. If, however, that the directors deemed the four-wheel engines more economical, if even less safe, why did they not make the necessary provision for diminishing, as far as they had it in their power, the serious effects which might be contemplated from an accident such as the present, by placing between the engine and the first carriage for passengers an empty carriage, or one with goods? The latter, I suppose, would have been objectionable, as they must have made good the damage, while there is no claim for life, which latter cannot be restored. I, therefore, contend, that for these two causes the directors are highly culpable. Surely, Government will insist on the lives of the public being protected—at least, so far as is practicable.

London, Dec. 13.

HUMANITAS.

[We regret that the letter of our correspondent should have remained over. It is satisfactory to find that the London and Birmingham Railway directors have determined on placing an empty carriage between the locomotive and passengers; but as the adoption of such precaution is not general, we agree with our correspondent that the interference of Government is essentially necessary.]

ON THE AXLES OF LOCOMOTIVE-ENGINES.

TO THE EDITOR OF THE MINING JOURNAL.

SIR,—The late lamentable accident on the London and Birmingham Railway, another added to the many calamities which have taken place during the past few years, by which human life has been sacrificed, through the sudden breakage of the axle of railway-engines, not only renders it imperative on all parties having influence to interest themselves in adopting measures to prevent such disasters, but will, I trust, open the flood gates of scientific research on the particular properties of iron, relative to strength, toughness, brittleness, &c., and the various causes to produce such results, such as heat, concussion, magnetism, &c. I am aware (as every reader of the *Mining Journal* must be) of the many important experiments which have been lately tried, and the results published, on the relative strength and qualities of various descriptions of iron, such as hot and cold-blast, that made by anthracite, bituminous coal, &c., but that to which I would most particularly call the attention of those gentlemen whose avocations lead them to the chemical investigation of iron, is its properties with regard to magnetism, produced by percussion, heat, friction, or the electric current, its subsequent crystallisation, and whether one, or some of, or all these combined, do not produce such effects upon the very best iron, as to have been the principal cause of all the accidents which have occurred from the breaking of railway axles. In a most able paper published in your *Journal* of the 6th August last, by Charles Hood, Esq., he clearly shows the powerful effects of these agents, upon every description of iron; James Nasmyth, Esq., in his "Experiments on the Tenacity of Wrought-iron" (*Mining Journal*, September 10), shows the same results; and from the discussion which took place at the Institution of Civil Engineers, after the reading of Mr. Hood's paper, and which will be found in your paper of the 17th September, it is evident that the general opinion among scientific men is the same. Such being the case, it appears to me evident that an axle made of the best iron, under the most favourable circumstances, and standing every test possible as a proof of its strength and expected durability, will, after travelling many thousand miles, become crystallised from the percussion necessarily attendant on its rapid transit, and in that state liable to break at a moment when danger is not suspected. The abstract chemical research, necessary for such a subject, I must leave to more experienced hands, but, anxious to see the advancement of great scientific works, and to have them carried out as near perfection as possible, and with safety to my fellow creatures, I have taken the liberty to send you these few remarks, believing there is yet a wide field open for the acquirement of knowledge on the properties of iron, under varying circumstances, and trusting they may attract the attention of persons competent to the investigation, and that at some future period, we shall either have iron not liable to be effected in the way described, or an axle produced from some other substance, which will bear percussion without deterioration.

Manchester, Dec. 14.

A CONSTANT READER.

[Perhaps our correspondent will, at his leisure, make an abstract of the several papers to which he makes reference, and favour us with his deductions; as also such other information on the subject as he may be able to acquire.]

"MUSKET'S BLACK-BAND" IN SOUTH WALES.

(FROM A SWANSEA CORRESPONDENT.)

Most of our readers who are engaged in mineral undertakings, are, doubtless, aware that a great sensation has been created in this part of the principality during the last few weeks, by the report, that the Messrs. Bailey, of Nantyglo, had discovered the seam, or vein, of iron ore, so well known in Scotland under the name of "Musket's Black-band," that same having been discovered given to it, in consequence of its having been first discovered by the celebrated metallurgist of that name, Mr. David Musket. We have now the pleasure of communicating the interesting fact, that it has recently been discovered in the anthracite district of this immediate neighbourhood. We are indebted to our neighbour, Mr. Crane, for a beautiful specimen of it, in its calined state, which is now lying at our office; and the same gentleman has kindly favoured us with a detail of the singular circumstances connected with this, its first, discovery in this vicinity. About a month since, Rees Davies, the furnace-manager of the Ynyscedwyn Iron Works, stated to some other persons who were at the time in his society, at the New Inn, Swansea, near the establishment, that he had a strong impression that the black-band would be found some time in that neighbourhood. Mr. Thomas Esteyth, the occupier of the farm, of Wernygellie, who was present, inquired what the black-band resembled in appearance. On his receiving a reply, he stated that there was a vein, which corresponded very much with the description given, in the break near the top of Pwllrhon's farm, on which Rees Davies accompanied him to the spot, and obtained a specimen of it. On his arrival at home, he compared it with a piece of Scotch black-band, which was fortunately at the Ynyscedwyn Iron Works, and was at once satisfied that it was the identical vein which he had been long so anxious to discover. Mr. Crane was, we are informed, at this time absent from home. On his return, he gave immediate direction that a few tons might be obtained for calculation. The piece with which we have been favoured was a part of the first pit ever calined at the Ynyscedwyn Iron Works. To assist others, who may be desirous of ascertaining whether it is in substance upon their respective properties, Mr. Crane has kindly informed us, that this vein of the black-band may, from its position in the Ynyscedwyn Iron Company's workings, be expected within from twelve to fifteen fathoms above the ironstone called the "Fenny-plains." If his information be correct, however, that the vein discovered at Nantyglo exists amongst the lowest measures, it is very probable that the vein discovered upon the property of the Messrs. Bailey, may be expected likewise in the corresponding deep measures of this part of the South Welsh Basin.

EXTRAORDINARY INVENTION.—It is said that M. D. Laborde, of Bayonne, has invented an apparatus for diving, by means of which they can remain under water a whole day, use their hands and feet in the most perfect manner, and preserve easy respiration and ample warmth.

MINING CORRESPONDENCE.

ENGLISH MINES.

HOLMURSH MINING COMPANY.

Dec. 19.—Hitchins's shaft is sunk below the ninety fathom level 8 fms. 5 ft. 6 in.; the ground, during the past week, has been extremely hard. In the 110 fathom level west the lode is still about eight inches wide, and worth 71. per fathom. In the 100 fathom level west the lode is ten inches wide, and worth 51. per fathom; at this level east the lode is small and unproductive; in the cross-cut, at the same level, towards the Flagjack lode, the ground continues hard; the lode in the stipes, in the back of ditto, is eighteen inches wide, and worth 351. per fathom; in the mine sinking in the bottom of ditto the lode is seven inches wide, and worth 81. per fathom. In the eighty and ninety fathom levels, west of Hitchins's shaft, we are still driving to cut the lode; in the mine sinking in the bottom of the latter no lode has yet been taken down; the lode in the eastern stipes, in the back of this level, is eighteen inches wide, and worth 341. per fathom; the lode in the middle stipes, in the back of this level, is twenty inches wide, and worth 401. per fathom; the lode in the western stipes, in the back of ditto, is eighteen inches wide, and worth 321. per fathom. In the eighty fathom level east the lode has improved during the past week, being at present one foot wide, and worth 71. per fathom; in the cross-cut at this level, towards the north lode, nothing of importance has been met since last reported; the lode in the stipes, in the back of ditto, is fifteen inches wide, and worth 231. per fathom. In the sixty-two and twenty fathom levels east no alteration; in the deep adit east the lode is eighteen inches wide, composed of mundio, spar, and capel. The pitches are much as for some weeks' past. F. PHILLIPS.

CORNWALL MINING COMPANY.

Dec. 19.—The lode in the seventy fathom level is much the same as reported last week; the ground is soft and wet. In rising from the back of the sixty fathom level, we are not taking down the lode; we expect to communicate to the mine sinking below the fifty fathom level in a few days; the lode in the mine is still producing some good work, but not so rich as it has been. The lode in the fifty fathom level, west of Murray's shaft, is one foot wide, composed of spar, capel, and spots of lead. We sampled on Friday last forty tons of lead ore, of good quality. J. WEBB.

TREGOLLAN MINING COMPANY.

Dec. 19.—The lode in the sixty-two fathom level east is much the same as last reported; but the lode going west at this level is not so good, which inclines me to believe that we are on the top of the bunch of ore; we shall commence sinking the shaft below the sixty-two fathom level in a day or two, under the most favourable appearances. The lode in the fifty fathom level east is very much improved within the last few days. We have sampled today (computed) seventy-five tons of ore. JAMES NIXON.

UNITED HILLS MINING COMPANY.

Dec. 20.—Seventy Fathom Level.—Lode in eastern end three and a half feet wide, eighteen inches on the north part of fair quality; western end, lode four feet wide, with stones of ore. Sixty Fathom Level.—In the eastern end the lode is three feet wide, nine inches on the north part good ore; in the western end the lode is four and a half feet wide, ore throughout, of average quality. Fifty Fathom Level.—Lode three and a half feet wide, two and a half feet of which very good ore. James's Shaft.—Lode two and a half feet wide, eighteen inches on the north part of good quality. Forty Fathom Level.—Lode three feet wide, producing some ore, with a promising appearance. N. LANGDON. S. H. PHARRE.

TRETOIL MINING COMPANY.

Dec. 19.—The lode in the forty fathom level, east of Williams's shaft, is much as last reported; we have not been able to make much progress in this end in the past week, in consequence of having altered the pit work to meet the winter's water; the lode in Hewwood's shaft, sinking under the forty fathom level, is eighteen inches wide, tribute ground; the lode in the forty fathom level, east of Hewwood's, is six inches wide, very good tribute ground, the lode in the forty fathom level, west of Hewwood's shaft, is one foot wide, good tribute ground. The lode in the thirty fathom level, east of Hewwood's shaft, is one foot wide, producing a small quantity of ore; we have not discovered any more lode in driving south on the cross-course at this level. The tin lode in the back of the adit level, east of Morcom's shaft, is much as last reported. We have sampled this day 135 tons of copper ore, and on Thursday last six tons of tin ore. H. WILLIAMS. J. MORCOM.

TRELKON CONSOLS MINING COMPANY.

Dec. 17.—The eighty, east of Christo, is small, and disordered by a cross-course; ditto west, we have not yet cut the lode. The seventy west is two and a half feet wide, and worth 71. per fathom. The sixty is cross-cutting under Garden's shaft. The fifty west is two feet wide, but not much ore. The forty west is three feet wide, and worth 71. per fathom. At Good Fortune the forty-four east has not been taken down this week; ditto west, is three feet wide, and worth 81. per fathom. The thirty-four fathom level is one foot wide, and worth 61. per fathom. The pitches in general are looking favourable. W. SYMONS.

WEST WHEEL JEWELL MINING ASSOCIATION.

Dec. 19.—At the eighty-five cross-cut, south from Buckingham's shaft, we have cut the south branch in the past week—nine inches wide, composed of spar and good stones of yellow ore; it is looking more promising than it did in the level above. At the seventy east, on Wheel Jewell lode, the lode has been small in the past week, but is now opening again, and is worth 101. per fathom; this level west the lode is nine inches wide, but unproductive. The fifty-seven east, on this lode, has not been taken down during the week; the mine under this level is worth 251. per fathom. The mine under the forty-two east, on Wheel Jewell lode, is worth 331. per fathom. S. LEAN.

FOREIGN MINES.

IMPERIAL BRAZILIAN MINING ASSOCIATION.

Gold Report.—Nine days' working, ending Oct. 2.—22 lbs. 2 oz. 2 dwts.

BRAZILIAN COMPANY.

Cata Branca, Oct. 4.—I have again the unpleasant duty of handing you a very poor week's gold report, and I fear that the next will be still worse. A few days since I took an opportunity of examining minutely, in company with the mining captain, every creek and corner of the workings, and I must say, that, in spite of the low produce, the appearance, not of parts only, but of the whole lode throughout, was never of brighter promise. I mentioned that a great change for the better had taken place in the western ground—this remark will apply to the whole lode. We have decidedly reached a different stage, and I feel certain to be seen what will be its value; another month or two will, I think, throw some light upon the matter, and I believe and hope that it will be for the better. The St. Antonio produce is still disappointing me, and tends to prove the uselessness of sampling; I, however, do not yet despair, and, as it can be worked for about 15000. to 20000. a year, it must be poor, indeed, if it does not pay.

Oct. 6.—The past week's gold report is better than I had anticipated. I trust and think that the next will show a considerable improvement, but, after having been so often disappointed, you will not be disposed to put much faith in this opinion, nor do I expect it; nevertheless, I cannot think otherwise, seeing the excellent appearance of the stones coming from the bottom. I am also glad to say, that those from the ground breaking in the Orlas Major and Minor are of an improved quality, which clearly proves that the gold holds down. Good work will be taken from these mines when all is in order—say, in two or three months. There are 20,000 tons there to be taken out, and which will tell in next year's returns. W. COYNEWORTH.

Gold report for two weeks, to 7th October, 25 lbs. 5 oz. 17 dwts.—Ditto for the month of September, 23 lbs. 1 oz. 3 dwts. 17 grs.

ST. JOHN DEL REY MINING COMPANY.

Morro Velho, Oct. 5.—Producers for September, 7700 oia. 60 grs., or 74 lbs. 9 oz. 4 dwts. 10 grs.; of which 71 oia. 60 grs. is from the armazens, and 7331 oia. from the stamp. Average number of hands working thirty days, 25-30. The produce per ton of stone is good, 4-4 1/2 oia. Mines.—The sinking in Babin and Gambo goes on well. Very little stone has been broken in the United Mines, where the stipes are in good order. The Champion mine is being lengthened; lode in the east, Gambo.—The lode situated in Mine Report, running north-east of Gambo, has been cut out to the extent of eleven feet (without coming to the foot wall) through very promising ground; its direction coincides with old workings on both sides of Mingen Hills, into which it apparently runs; should it do so, a considerable extent of lode, above the level of the tramroad, will be added to the Gambo. The Mingen Hill is 25 fms. 3 ft. above the level of tramroad, and horizontal distance from nose of hill, to point immediately under apex of the hill, 75 fms.; on the side furthest from the mine, the mountain slopes away more gradually; if the lode continues in that direction, the length of available lode will be much longer on that side than on this. The lode in the Hill works, driving is slow, the water is quick, and ground rugged; much interest attaches to the operation in both these mines. Dam.—Is approaching completion; height above bottom of bank, 50 ft. 4 in. feet; as it narrows considerably towards the top, the remaining ten feet will soon be put on; height of water now dammed back, 35 ft. 6 in. Monthly costs for September, 26,133 496, of which 26,400 is for a wage. The earnings from Rio is heavy; so is overtime for whites and blacks, the latter charge incurred principally for the house dam.

MINING NOTICES.

ENRICHED MASS OF NATIVE GOLD.—The Russian Commercial Society states that a lump of native gold, of the enormous weight of 3 pounds 7 lbs. (about 30 lbs. English), was found on the 7th instant, in the sands of Minsk, near the village of Znamensk, and placed in the museum of the Institute of Mines at St. Petersburg.

MINE ACCIDENTS.

Fenwick Colliery, near Belford.—A melancholy accident occurred here on Friday week, whereby two brothers, Thomas and Andrew Alexander, lost their lives. It appears that five men had been working in the pit, when suddenly an unusual noise was heard, and, on turning to see from whence it came, they were horror-struck on seeing the colliery rapidly filling with water. Three of them immediately ran and seized hold of a rope, whereby they reached the top, but before the two brothers could make any attempt, the water had so increased as to completely cut off all chance of escape. Every effort was made to subdue the water, but before that could be effected, and the passage cleared, which was not until Monday afternoon, life was extinct.

Wharfedale Mine.—T. Danstun accidentally fell into one of the levels, and received such injuries (on his head) as to occasion immediate death.

Belmont Pit, Pittington.—As Mr. Bamborough, an overseer at this pit, was talking to two men, a large stone fell from the roof, and killed him.

Wharfedale Mine.—As Mr. Tippett, who was employed at the seventy fathom level, was in the act of descending therefrom, he slipped his foot, but saved himself from falling by seizing one of the spindlers with one hand, but received such internal injuries, that he died in consequence.

PROCEEDINGS OF PUBLIC COMPANIES.

NEW BRUNSWICK AND NOVA SCOTIA LAND COMPANY.

A special meeting of the proprietors of this company took place on Thursday, the 23d inst., at the George and Vulture Tavern, Cornhill, to receive the report of the directors on the general affairs of the company.

JOHN MOXON, Esq., in the chair.

The CHAIRMAN said, the present was a special general meeting, called at the suggestion of Mr. Powney, at the annual meeting in March last, in order that they might understand the actual position of the company, and what were thought to be its prospects for 1863.

The SECRETARY then read the advertisement convening the meeting, and afterwards the following REPORT.

In compliance with the suggestion, which originated at the annual general meeting in March, the directors have had much pleasure in convening a special meeting on the present occasion, for the purpose of considering the position and prospects of the company generally, as the previous mode regarding the arrears only, and at the same time directed the attention of the proprietors from matters of greater interest. The result of the meetings held during the present year, for considering the arrears of calls, and regulating the company's capital accordingly, showed them to be 26,564, stock altogether, which has been forfeited; owing arrears, not now recoverable, amounting to 16,000, which, with the previous payments, make a sum forfeited to the company's use and benefit of 12,564. The company's capital stock may, therefore, be considered as nearly entire and effective; all the calls, amounting to 75 per cent., having been paid on 124,305, and a portion of the arrears due on 17,000, have been arranged to be received in 1863 making the total available capital 171,305. The directors regret the non-recovery of the arrears, because some further call, though it will not exceed 3 per cent., will, probably, become necessary in January or February, to repay the loan of 4000, advanced by the bankers, in order to complete the sum required for the final instalment of the purchase money, which was duly paid on the 30th of last November.

The directors recommend the continuance of the company's establishments here and in the province for some time to come, with any modifications that may be deemed advisable by the proprietors, in which case the following would be the liabilities for the year 1863:

Loan due to the bankers—say	4000 0 0
Probable surplus expenditure for the year beyond current receipts—say	1000 0 0
Claims outstanding in London—say	500 0 0
Total	5500 0 0

In order to meet these payments, and to provide a very moderate balance against the annual general meeting in March, 1864, the following would be the cash assets: Call of a p. ct. on 124,305, capital stock, more immediately available... 4039 10 0
Ditto on 17,000... 510 0 0
On which there is an arrear now due, and arranged for, amounting to 1254 0 0
Total... 4503 10 0

According to this calculation, and omitting the inconsiderable balance at the bankers of 517. 2s. 11d., nearly appropriated, about 3000, would remain available, and the directors beg to state that, according to the returns which came recently from Captain Hayne, it appears that the sales of land effected by him during the present season, up to 20th September, amount to 3770 acres, and in order to give a further impulse to the settlement of persons under present circumstances, the low price of land in the province, and the few arrivals of persons of substance from England, the directors have authorized the chief commissioners to dispose of about 2000 acres to a body of settlers, to be paid for by instalments, with a proviso that the amount of the first instalment of a shilling per acre be paid in forming roads through the tracts as soon as the contracts for sale are completed. A similar plan has been adopted, and set apart for a church, and a clergyman has been obtained by the Bishop of Nova Scotia. It will also be satisfactory to the proprietors to learn that an office has recently been established at Manchester, independently of the company, by a gentleman who has recently returned from a visit to Stanley, and that 1500 acres have been sold within the last month, on which the first instalment of 1s. per acre has been received; and, as it is well known to persons resident in and about Stanley, that the directors' care and attention to emigrants on and after arrival have always been anxiously afforded, without regard to the mere terms of contract, and the advantages offered to settlers by the company are becoming appreciated in the north of England, and directors are in the confident expectation that very considerable sales of land will be made, and that so many and increasing class who possess the means, and are determined to emigrate to British North America.

The CHAIRMAN entered at considerable length into the various points of the report, which needed further explanation, and observed that the directors, in consequence of the arrears of calls, found themselves obliged to borrow 40000. to pay the last instalment to Government for the land, which they did, instead of availing themselves of the 26,0000. stock at a sacrifice, but which was now an absolute gain of 12,7000. to the company. With respect to the land sold by Mr. Burchell, at Manchester, the parties who had purchased intended to sail early in the spring, and were all such people as he considered would make good settlers.

In answer to Mr. Hankey, the CHAIRMAN said, that the price the land had been sold at was 1s. per acre.—Mr. RICHARDS wished to know what had already been sold?—The CHAIRMAN said that they had sold altogether a large quantity of land, to which there was probably to be added the 2000 now treating for, and 1500 acres actually sold at Manchester, which would altogether prove a considerable settlement, and would so improve the remainder that the directors might reasonably look out for higher prices.

Mr. POWNEY thought that such sales, if continued, would be so absorbed by the current expenses as would leave no profit to the shareholders.—The CHAIRMAN: We should not think of selling large tracts of land to speculators so low as 1s. per acre.

Mr. HANKEY wished to know whether the proposed sale of 3 per cent. might not be injudicious, when something might be done with respect to the forfeited shares. If they were appropriated amongst the existing proprietors who were willing to take them, he thought the engagements of the company might thereby be equally fulfilled by the instalments.—The CHAIRMAN said he should be happy if the market should so revive as to enable the directors to sell the stock to advantage, so as to preclude the necessity of calling on the proprietors.—A FARRINGTON thought the directors might raise a sum of money by way of loan to prevent this call being made.

In answer to a proprietor, the CHAIRMAN said that 75 per cent. had been paid on the shares upon a capital of 124,305. There was 100,000 paid, and 12,305, forfeited, which made about 142,000, actually received.

In obedience to the request of Mr. Powney, the CHAIRMAN read the detail of the probable receipts and expenditure for the year 1863.

Mr. POWNEY then entered at considerable length into the prospects and expenditure of the company, which he maintained, had not been sufficiently reduced, considering the depressed state of the company's affairs, and he thought the directors ought to give their services gratuitously.—In reply to the hon. proprietor, the CHAIRMAN stated that the expenditure had been reduced so low as there was a possibility, if the company were to exist, and that if all the recommendations of that gentleman were adopted, the property of the company would soon be exhausted. There had been receipts for timber in former years of 10000., which remained in arrears at present, but in a few years there would be a further consumption of that article.

Mr. RICHARDS observed that some of his observations applied to the salary of the directors, which was but a trifling consideration.—Mr. FARRINGTON said that the board had voluntarily reduced their salaries from 5000. to 1000.—Mr. N. SMITH remarked that from his experience a gentleman board would never serve the interests of any company, and part of this company's difficulties came from their directors not being remunerated at 5000.—Mr. POWNEY, though he assented, objected to withdraw his suggestion for a further reduction of some and others, but here his testimony to the contrary.

Mr. RICHARDS then, after some preliminary remarks, moved the adoption of the report, and also that the checks of the proprietors be given to the worthy chairman and directors.—The CHAIRMAN said the board were very large pro-

prietors.—Mr. HANLEY: One-fourth of the proprietary.—The motion was then seconded by Mr. RICHARDS, and carried unanimously.

The CHAIRMAN, having returned thanks, called on Mr. Burchell, who gave a very interesting account of the company's tracts between Stanley and Fredericton, and said that one of the emigrants going out in the spring, was a gentleman possessed of 10,0000., and had a family of seven children, and his impression was that industry could not fail of success in this colony.—The meeting then adjourned.

[It appeared, in the course of conversation, that one of the boys of the Children's Friend Society had become so industrious as to purchase eighty acres of land of the company, and was likely to become a valuable settler.]

BRITISH AMERICAN ASSOCIATION FOR EMIGRATION AND COLONIZATION.

On Friday, the 23d inst., a special meeting of this association was held at the London Tavern, Bishopsgate-street, to receive the report of the committee of inquiry to the consulting council, on the affairs of the association. The meeting was numerously attended, and on the motion of Mr. LESTER, the Hon. Sir WILLIAM OSLIVY, Bart., took the chair. The SECRETARY then read the minutes of the last meeting, and also the report of the committee appointed to inquire into the charges against the association; from which it appeared, that since the 9th inst. the committee had met from day to day, and had before them the whole of the books, documents, and accounts, connected with the objects and formation of the association, and had submitted the whole of the executive officers to a strict and careful examination, from which they arrived at the following conclusions:—1st. That no names had been placed in the printed prospectus of the association, without authority.

—2nd. That the rules of the association had been matured with judgment, and, with some modifications, would be most complete for the working of the establishment.—3rd. That all the charges brought against the association, founded on proceedings at the Mansion-house, were unfounded, and not sustained by evidence, and that the conduct of the then chief magistrate, in writing to the Duke of Argyll, was premature and unjustifiable.—4th. That with respect to the deputation of the emigrants in the brig *Barbados*, in Prince Edward's Island, they had the evidence of the Government agent on emigration, and others, of the thorough state of repair, and seaworthiness of the vessel, completeness of its equipment, and the superior quality of its stores; and that every single emigrant family sent out preferred her to the *Lady Wood*, but the lateness of the departure was condemned as a precedent.

—5th. That the *Barbados* sailed under the command of a most able and experienced master, who had made nine voyages to the Gulf of St. Lawrence.—6th. That the various properties which had been acquired for the association, had been selected with judgment, and held out a prospect of certain and abundant annual returns upon the capital to be invested.—7th. That the affairs had been administered with economy, and that none of the principal officers of the association have received any remuneration for services.—8th. That the financial plan to complete the purchases, had been well matured.—9th. That the executive commissioners appear to your committee to be entitled to the best thanks of the association, and the confidence of the public, though circumstances of an injurious character had impeded the prosperous action of the association.—10th. And finally, That steps towards procuring a charter be persevered in; that the full number of commissioners be established; that an enlarged prospectus be issued; and that a subscription for shares on the terms of it, be opened.—Signed, CHARLES HERRICK, Chairman.—Sir R. BROWN then addressed the meeting at very considerable length, in which he was frequently applauded, and concluded by moving the reception of the report, and a vote of thanks to the committee of inquiry, which was seconded by Sir J. D. HAY, Bart., and passed unanimously.—Dr. ROSEN then addressed the meeting at some length, and finished by moving, "That the commissioners be advised to act on the recommendations of the report," which was seconded by S. DOUGLASSON, Esq. The vote of thanks was acknowledged by J. H. BARROW, Esq.; after which, a vote of thanks was passed to the chairman, and the meeting adjourned.—[Our space will not admit of a full report of this meeting, but, judging from the tone pervading it, it appears that the charges brought against the association had been fully met and rebutted, and that its objects, when carried out, will not only be a source of profitable investment to the capitalist, but also of great advantage to the emigrants from this country.]

BAHIA STEAM NAVIGATION COMPANY.

At the half-yearly general meeting of the proprietors of this company, held at the George and Vulture Tavern, on Friday, the 23d instant, James HANCOCK, Esq., in the chair, the report and accounts were read, which explained, in a very clear manner, the present state of the funds, and the prospects of this hitherto unfortunate company, and some small down of large success to be doing, that they will yet be able to relieve their affairs. The meeting lasted upwards of three hours, the principal features in which were the resolutions, which were to the effect, that if the communications from the Bahia were satisfactory, the directors were to call a special meeting, but that before certain resolutions, proposed by Mr. HANCOCK, the hon. sec., could be adopted by the shareholders, they resolved to take time to consider.

BIRMINGHAM AND GLOUCESTER RAILWAY.

At a meeting of the London shareholders, held at the Guildhall Tavern, a resolution was passed, agreeing to a requisition calling upon the directors to convene a general meeting, to appoint a committee of inquiry, they considered it was essential to enter into a full inquiry into the past, present, and future expenditure of the company, to consider the rates of fares, freight, and other sources of income, in the general affairs of the company, and requiring that such special meeting should be called within twenty-one days of the service of the requisition.

ELECTRO-METALLURGY.

The new art of depositing metals from their solutions, by means of the galvanic current, has passed so rapidly to its present advanced state, its applications have grown so numerous, and some of them are of such public importance, that we think it our duty to lay before our readers a short account of the process.—Messrs. Elkingtons, of Moorgate-street, having kindly shown us the whole minutiae of the operations, and explained the various results from the different metals employed. In the first place, a solution, either acid or alkaline, of the metal to be deposited, must be obtained; the article to be plated is then placed in the solution, and connected by a wire conductor to the negative pole of a galvanic battery; a sheet of the same metal as that held in solution, is also placed in it, opposite the article to be covered, and connected to the positive pole of the battery; a galvanic current is then produced, which decomposes the solution, the metal combining with the article to be plated, and the acid, or alkali, with the plate of metal placed opposite, thus maintaining, by its own action, the original strength of the solution, as for every atom of metal deposited from the solution, there is a corresponding atom dissolved from the plate. That the advantages to be obtained, both to science and the arts, by this process, is great, is beyond dispute. By it, metals, which have hitherto been unworkable from their brittleness, volatility, or refractory nature, can now be applied to almost any purpose, and of any form or shape the operator may desire. Under the old system of plating and gilding many disadvantages existed; a very slight film of gold or silver was deposited, and when worn at the edges, it was impossible to repair the article without completely replating it. Under the present process, any part of a piece of plated or gilt goods, where the gold or silver has worn off, may be covered, and so perfect is the operation that no joint is perceived. All the metals which have yet been acted upon, have yielded readily to the power of the galvanic current. Gold, silver, zinc, copper, &c., and platinum—a metal so valuable in the arts, but hitherto from its refractory nature, of limited use—is rendered perfectly easy of working. All the metals may be precipitated upon metals of wax, or any other plastic substance, in any thickness required, and the rapidity of the operation is easily astonishing. A copper shewcase, for instance, hung on a piece of copper wire to the conductors, and held in the solution only two or three seconds, becomes as coated with silver as to have lost its original colour; and one great advantage is, that silver being an excellent conductor of heat, culinary utensils, fixed in this way, will boil water in half the time that a stoned one will. Copper, it is found, is the most easily deposited metal, and its application in various ways will, no doubt, be found highly useful in the arts. Rollers for printing plates, engraving, &c., may be now multiplied to any extent, and the most delicate impressions copied. Zinc, from its low price, and difficulty of oxidation, is a metal of great importance in the arts. Iron covered with zinc by this process, has a singular property. The union of the two metals causes galvanic action, and should any part of the zinc be rubbed off, the conductive portion remaining protects the iron from oxidation. By this means hollows, screws, bolts, hinges, and every article exposed to the action of the water or the atmosphere, may be rendered more durable, while the additional cost is so trifling as to be scarcely worth notice, and the only care necessary is, that the iron, to be covered, should be perfectly clean, and free from the particles which form in burning. Under the old process of dipping iron in molten zinc, the iron was rendered brittle, and in many cases useless, while, by the galvanic operation, iron cores are made, elastic, or tough, retain all their properties unaltered. Tin, antimony, bismuth, cobalt, nickel, palladium, &c., metals which are not affected by exposure to oxygen, may be coated on any other metal, and even upon other substances, and great use has been made in the arts in these directions, it is hard to say what further improvements may not yet be made. The public are indebted to the spirit and perseverance of the Messrs. Elkingtons and Co., for the progress already made in this branch of practical science, and we have authority for saying, that experiments on a large scale are being successfully made, and the results from which are anticipated to be of a most beneficial and important nature, which, when perfected, will be laid before the public.—[We may here mention, that at the annual meeting of the Academy of Sciences, at Paris, Mr. Elkington has been awarded a prize of 5000 francs, for his important discoveries in plating and gilding, and the depositing of metals from their solutions by galvanism.]

